

PIEDMONT BASIC GLADE (FALLS DAM SLOPE SUBTYPE)

Concept: Piedmont Basic Glades are open, generally grassy, heterogeneous woodlands or savannas of shallow soils over irregular bedrock (not exfoliated granitic rocks), showing circumneutral or basic influence in their flora. The Falls Dam Slope Subtype is a distinctive occurrence, apparently unique, with substantial *Pinus echinata* and has a high species richness that includes a number of plants of prairie affinities. The cause of the distinctive character of this subtype is believed to be related to a loose substrate of slate fragments as well as to fire.

Distinguishing Features: All the glade communities are distinguished from forest communities by having a persistently open tree canopy, ranging from woodland structure to sparser. Piedmont Basic Glades are distinguished from Piedmont Acidic Glades by having multiple species characteristic of circumneutral or basic sites. Species characteristic of less acidic soils, such as *Cercis canadensis*, *Rhus aromatica*, *Fraxinus americana*, *Myriopteris (Cheilanthes) tomentosa*, or *Aquilegia canadensis*, are present. Species such as *Chionanthus virginicus* and *Carya* spp. are usually abundant. The Falls Dam Slope Subtype is distinguished by having low herb cover, an unstable substrate of rock fragments, and evidence of slope instability. A few examples of the Typic Subtype have slate or shale substrate and have some ground cover by rock fragments but it is less extensive.

Synonyms: *Pinus echinata* - *Quercus stellata* - *Quercus marilandica* / *Andropogon gyrans* - *Chrysopsis mariana* Woodland (CEGL004447).

Ecological Systems: Southern Piedmont Glade and Barrens (CES202.328).

Sites: The only known example occurs on a steep-to-moderate, west-facing slope with a substrate of thin-bedded slate-like rock.

Soils: The soil is a very channery clay loam, with a large fraction of flat rock fragments. These fragments also cover most of the surface. There are frequent small outcrops of the thin-bedded rock. The soft and fragmented rock leads to an uncertain distinction between soil and bedrock.

Hydrology: This community is dry to xeric, given its west-facing slope aspect. Water likely drains rapidly through the rock fragments, but the high cover of flat rocks on the soil surface must reduce evaporation.

Vegetation: The vegetation is an open woodland or savanna dominated by *Quercus stellata*, *Pinus virginiana*, and *Pinus echinata*, with abundant *Quercus marilandica*. Other trees include *Carya tomentosa*, *Carya carolinae-septentrionalis*, and in canopy gaps, *Liquidambar styraciflua* and *Robinia pseudo-acacia*. Smaller numbers of *Cercis canadensis*, *Diospyros virginiana*, *Carya glabra*, *Fraxinus biltmoreana*, and other species are present. The shrub layer is open to sparse. *Vaccinium arboreum* is the most abundant species, but some *Rhus aromatica* and *Rhus copallinum* are present. The herb layer is patchy. Substantial areas are largely bare slate fragments, but patches of dense grass also occur. *Phaseolus polystachyos* is abundant in parts. A high diversity of other herbs is present, including *Schizachyrium scoparium*, *Andropogon gyrans*, *Solidago odora*, *Antennaria plantaginifolia*, *Clitoria mariana* var. *mariana*, *Dichanthelium*

depauperatum, *Cirsium carolinianum*, *Helianthus divaricatus*, *Helianthus schweinitzii*, *Silene virginica*, *Cynoglossum virginianum*, *Desmodium rotundifolium*, and numerous others.

Range and Abundance: Ranked G1?. Only a single example is known.

Associations and Patterns: This community occurs as a small patch. It is surrounded by Piedmont Monadnock Forest and Dry Oak–Hickory Forest.

Variation: The one known example is quite heterogeneous. It is difficult to tell how much of the variation is enduring and how much was caused by the behavior of recent fires.

Dynamics: Dynamics are not well known. The abundant flat rock fragments create an unstable substrate on the steep slope, and this is believed to be responsible for the distinctive character of the community. The abundance of *Pinus virginiana* is shared with Acidic Shale Slope Woodland, a community of more unstable substrates. The greater abundance of ruderal species, compared to the Typic Subtype, may also be related to this. Besides a tendency to slip, the numerous parallel rock fragments presumably are a barrier to root penetration and may favor some species while excluding others.

The site burned in the 1980s or early 1990s, and this fire created abundant canopy gaps. It is unclear how much the community may depend on fire in the long term. It is also difficult to tell what of its current characteristics are transient responses to the fire.

Comments: This community needs more work to clarify its relationship to other glades. Monitoring over time is also needed to describe its long-term character and dynamics.

Rare species:

Vascular plants: *Cirsium carolinianum* and *Helianthus schweinitzii*.

References: